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VOLUME XXIV MAY, 1925 NUMBER 5

STUDIES IN THE GEOGRAPHY OF BRAZIL

PART VII

EAST CENTRAL BRAZIL*

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Northwestern University

East Central Brazil is preeminently the most highly developed part of the country. Moreover, to the industrial activities, commerce, wealth, and progressiveness of this section, Brazil owes most of its world rank. The importance of manufactures here is not equalled in any other part of Brazil nor surpassed in any other similar area in South America. The commerce that passes thru the three ports of Santos, Rio, and Victoria, had in 1923 an export value of £52,140,000 and an import of £39,840,000 or 71 and 78 per cent of the total Brazilian export and import trade respectively.[1] Altho this section, made up of the states of Rio de Janiero, São Paulo, Espirito Santo, and Minas Geraes, has only 12 per cent of the total area, it has 45 per cent of the total population.[2] Less than half the people, therefore, control about three-fourths of the commerce of the country. Practically all (99.8 per cent in 1923) of the export coffee is produced here; and this is, by far, Brazil's greatest single item of wealth. The State of São Paulo, alone, represents 60 per cent of the nation's wealth.[3] The intricate network of railways, in parts of this section making up 46 per cent of the total mileage of the country, is a fair index of the preeminence of this region.[4]

Why this should be so is an interesting problem. Why should one part of the country overshadow so completely all others?

*The preceding numbers of this series together with certain explanations of terms appeared in the *Journal* for Nov. and Dec., 1923, May, 1924, and March, 1925.

[1] Wileman's *Brazilian Review*, July 16, 1924

[2] Based on statistics in U. S. Dep't. of Com. Misc. Ser. 86, pp. 9, 10

[3] Wileman's *Brazilian Review*, Aug. 1, 1923

[4] See railway map in the *Journal*, Nov., 1923, pp. 302, 303

Broadly speaking, all the people have the same form of government, the same race relationships, the same religion, and the same general ideals of life. Why, then, is not the same degree of development manifest in other areas? If it were, what a powerful factor in world trade Brazil would be. Obviously, there must be certain geographic factors at work in favor of this region not active or less active elsewhere. Some of these "natural advantages" are fairly evident, but to give them their proper evaluation is not an easy task. How much may be attributed to an early start? To what extent is the climate a vital factor? How much of a help in one respect and a hindrance in another is due to the plateau and the abrupt eastward escarpment? How important have the soils been in the growth of the coffee industry? What part have the minerals played in the opening up of the country? Are there any particular advantages in being on an important trade route? These and a host of other questions naturally suggest themselves, but unfortunately with our present knowledge most questions can be answered only in the most general terms. Even in a brief paper like this only a few of the major facts can be presented, leaving much to be filled in and answered by the earnest student.

The Early Development

The early development of the coastal region was very much like that of Northeast Brazil, only less rapid. Settlements here also were attacked and raided by hostile European nations; and, in addition were much harassed by the fierce Indian tribes of the plateau. However, the struggle for possession was never as severe as in the north, since this part of the coast was considered, relatively, of little value. On the whole, Northeast Brazil had a decided advantage over this section, chiefly on account of greater nearness to the mother country and the more distinctly tropical nature of the products.

"Altho the "River of January" was first entered in 1502, the town of Rio de Janeiro had little importance until about the latter part of the seventeenth century when it became the gateway to the gold regions. Santos was started in 1547 and in 1553 the Jesuits founded the city of São Paulo. As early as 1608, twelve years before the Pilgrim Fathers landed at Plymouth Rock, the Government of Brazil was divided into two spheres of control; and the "capitanias" of Espirito Santo, Rio, and São Vicente (São Paulo)

made up the southern division with the capital at Rio, the capital of the northern division remaining at Bahia. Even at this early date the fundamental geographic differences between the different parts were recognized.

The Portuguese colonial policy was no better than that of Spain, consequently one of the great events in the development of Brazil was the arrival at Rio of the Portuguese Emperor and Court in 1808. Brazil, thus suddenly, was transformed from a mere appanage into a full fledged nation, and all hampering restrictions of the colonial period were removed. Political considerations now

FIG. 1. Waiting their turn to get to the ocean liner in the harbor at Santos. Ten million sacks of coffee are handled annually by these two-wheel mule carts.

took a new point of view; ports were opened to the commerce of all nations; the system of seclusion and monopolies was abandoned; manufacturing and trading were permitted; foreigners were allowed to enter; a national bank was established; commercial corporations were given franchises; and, in fact, there was virtually a complete reversal of policies to the great benefit of Brazil. As a world factor Brazil had its origin at this time.

MINING

Altho the early colonial development of Brazil was based on agriculture, quite different from Spanish America, it readily gave way to new activities with the discovery of gold during the latter half of the seventeenth century. This was not very difficult as the object had been merely to exploit the lands and not to make homes. Unfortunately, however, instead of new activities being added to

those already established, mining almost at once became paramount, to the neglect of all else. The country went gold mad. Sugar and wood no longer could compete in interest with the newfound treasure. Negro and Indian slaves were taken from the coastal plantations, and prosperous sections again became jungle. The African traders and the raiding bandeirantes now had a market that seemingly could not be glutted. Estimates place the number of slaves in the gold region during the height of mining activities at a half million and in many of the interior towns of the old mining regions the effect of this heavy importation still is seen in the high percentage of Negro blood.

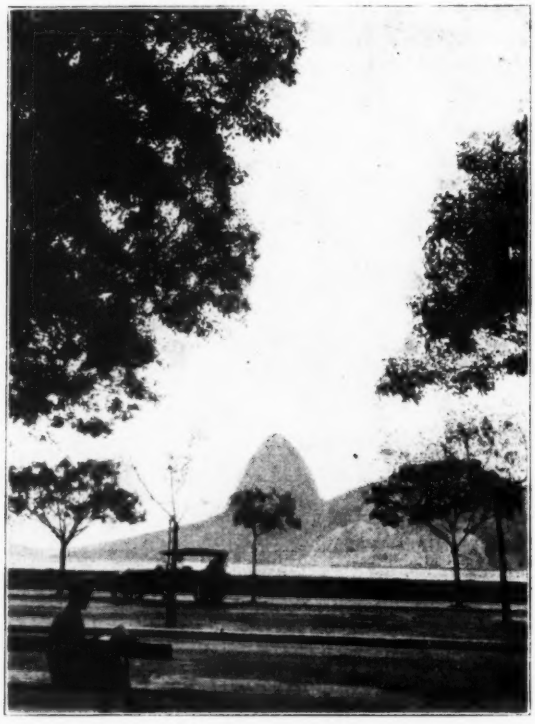

FIG. 2. One of the many beautiful views in Rio. According to many visitors Rio has the most beautiful drives of any city in the world.

This large number of slaves does not seem surprising when the amount of work done in the mining sections is considered. Literally miles upon miles of hillsides were overturned and washed away by water brought in the numerous canals, still in evidence; and, besides, a large force was necessary merely to supply the food for the gold workers. In the beginning the mining development was slow because of the difficulty (1) of getting and (2) of feeding the slaves. But, in spite of this, by 1700 the gold output was about one-fourth that of the world, and by 1745, when at its best, fully one-half. Accurate figures, of course, are not available, but it has been estimated that about this time the King's fifth "amounted to at least a million sterling annually."[5] In the following decade the

[5] Quoted in Miller and Singewald, Mineral Deposits of South America, p. 155. See pp. 154-218 for details on minerals.

decline set in, for at no time were regions systematically worked nor attempts made to do anything but skim the richest deposits. Practically all mining was by placer, and the few attempts at lode mining were crude and unsuccessful.

The discovery and working of gold deposits had some important geographic effects. (1) It led to a big increase in population for Brazil, from about 750,000 at the time of the discovery of gold to about 2,000,000 by 1775, approximately a century later. This is rather striking for Portugal's population at the time was

FIG. 3. To avoid glare, so it is said, several cities have their broad walks paved with dark and light colored cobble stone. Pavements, such as this one in Rio, are not found, however, ultra comfortable to the feet or to the eye by the American visitor.

not much greater. (2) It took the people into the interior, opened up routes and made the other resources better known. At the time of the gold discovery the population of Minas was insignificant, but by 1775 the population had risen to 400,000. (3) It gave a rapid growth to Rio as the main port, and with a population of 50,000 by 1775 it surpassed Bahia as the chief city. (4) It led to the discovery of diamonds near Tijuco (now Diamantina) about 1730, and from then on Brazil supplied the world with diamonds up to about 1870, when the Kimberly mines were opened.

Mining developments are again gradually becoming important, but the output is not a fair index of the richness of the resources.

They are, except for the manganese and diamonds of Bahia and coal in South Brazil, almost wholly in this division. The total exportation during 1920 amounted to over 50,000 contos (paper) but dropped to about 33,000 contos in 1921, rising again to 35,000 in 1922 and 45,000 in 1923.[6] The leading items for export for 1921 in thousand paper contos are as follows: manganese, 22.9; diamonds, 4.7; carbonados, 2.6; precious stones and mica, each 0.8; rock crystals and monazite sands, each 0.2; pig iron and agates, each 0.1. Gold and silver do not appear in statistics as the product of the mines is taken over by the government, but the average annual production of gold in recent years is given as about 15,000 contos.[7] The value of all minerals produced in 1921 is estimated at 83,000 contos paper.

FIG. 4. In the interior the children of many families show a touch of both Negro and Indian blood. Two of these members of the same family show Negro blood, little girl at the right Indian blood.

Much has been heard in recent years relative to the enormously large high grade iron ore deposits. Estimates vary considerably due to lack of thoro surveys, yet "without doubt Brazil contains the most extensive undeveloped deposits of iron of any country in the world."[8] Moreover, there are few places in the world where ore of such high grade exists, found here in such exceptionally large deposits. The ores are widely distributed, large deposits in at least ten states, yet centering in Minas Geraes some 300 or 400 miles from the coast.

[6] Wileman's *Brazilian Review*, Apr. 9, 1924

[7] *Brazilian American*, June 23, 1923

[8] Quoted by Miller and Singewald, Mineral Deposits of South America, p. 166. See also E. C. Harder, *Bull. Am. Geog. Soc.*, Vol. 42, pp. 365, 366, Iron Resources of Brazil. For details as to amount and as to future utilization see: E C. Harder, The Iron Industry in Brazil *Trans. Am. Inst. Min. Eng.*, Vol. 50, pp. 143-160 (1915)

Thus far these deposits have had little effect on the development of the country due in large part (1) to the lack of coking coal and (2) to transportation difficulties. Other natural conditions seem to be especially favorable for the manufacture of steel; high grade ore, rich deposits of manganese and abundant limestone in close proximity. In one case in Minas an upturned bed of limestone has a rich deposit of manganese on one side and a mountain of iron on the other.

FIG. 5. A street scene in Diamantina. Note the "sidewalk" in the middle of the street, a most effective way where the region is too hilly for wheeled vehicles. The saying locally is that in "diamond days" the middle of the street was safest, hence the main walk there.

Natural conditions, thus, fall just short of making parts of Minas the great iron center of the future. Without coking coal the deposits of iron and manganese lose for the present the greater part of their potential value. There is little prospect that coal will be imported since Brazil does not offer a very large market for manufactured iron, and could hardly expect to compete, under the circumstances, in the iron and steel trade of the world. The ore, like in the past, is more likely to go to the coal where industrial centers have arisen and where a market exists. Even the problem of getting the ore to the coast for export is serious, as the several railroads have heavy grades and sharp curves over large portions of their lines. The most feasible outlet is believed to be along the Rio Doce thru the port of Victoria, where a route with a maximum grade of one per cent could be developed.

The lack of fuel is a great handicap. Less than 300,000 tons of coal are mined annually in the country and this amount needs to

be washed before it is even fit for briquetting. The annual import varies between one and one and a half million tons.[9] Practically all the iron manufactured is with charcoal, and the rapid denudation of the scanty tree growth of these regions is alarming. This together with the systematic burning over of the land during the dry season to improve the pastures is having its effects already in increased erosion, in deposition of waste on valuable lands, and in disastrous floods.[10] The hope of this section lies in overcoming the lack of coal by the development of its excellent power sites for cheap electrical transportation, cheap power, and in time the electrical smelting of its rich deposits of iron ore.

COFFEE

Brazil's position in the commercial world is of relatively recent standing and due almost wholly to coffee. For many years after its introduction into Pará, about 1723, coffee was a minor item in the life of the nation. From Pará it spread southward reaching Rio about 50 years later (1770). A hundred years after the introduction the export was less than 200,000 bags[11] and not more than a fourth of the world's trade. Today coffee overshadows all in this section and in the whole nation. On the average 70 per cent of the world crop is grown in Brazil and two-thirds of this in the state of São Paulo. Out of 450,000 laborers employed in this state 400,000 are said to get their livelihood, directly or indirectly, from coffee.[12] Such a large export of a single item means that Brazil is a one-product country. It also means that the whole financial fabric of the country depends on the prosperity of the coffee industry and that other interests become subservient to it.

From about 1830 to 1890 was a period of slow but steady growth of the industry. Natural conditions were favorable for a much more rapid growth, as especially favorable locations had been found in Bahia, Minas Geraes, Rio de Janeiro, and São Paulo. However, other conditions overruled the geographic. (1) There

[9] See Imports of Coal, Wileman's *Brazilian Review*, Feb. 27, 1924

[10] For the effects of these floods see Wileman's *Brazilian Review*, March 12, 1924. The February and March floods "worked all sorts of havoc in the two states," Minas and Rio. The floods were especially severe at Campinas, the rich sugar section.

[11] Before 1873 the bag represented 75 kg.; after 1873, 60 kg. (132 lb.)

[12] Wm. H. Ukers, All About Coffee, p. 207 (1922) ($15.00 net). As its name implies the book is a perfect coffee thesaurus, having 860 pages and giving a bibliography of 1,348 titles.

was a prohibition on the importation of slaves in 1856 which produced serious labor shortages as the coffee industry is not a product of the small farmer. (2) The coffee crop is one in which a large capital is tied up and the financial crises of 1859 and 1873

In the grafs presented the shaded areas represent the mean monthly rainfall, and the horizontal line the mean monthly temperature. For ready comparison the stations are arranged on the chart according to the location in latitude and longitude. Grafs I and II, III and IV, V and VI make three groups of approximately the same latitude, the right hand column is made up of stations of somewhat similar longitude and the column on the left is of stations located farther west nearer the interior of the country.

As may be noted, there are sharply marked wet and dry seasons. The farther south the station the more pronounced is this seasonal rhythm. The rainy season comes during the summer and although heavy, for the most part, yet is not sufficiently well distributed to produce forests except in the most favored sections and situations. In general the region is covered with a low scrub, the larger trees are cut for charcoal and much of the smaller growth is destroyed by the dry season fires set purposely with the idea of increasing the value of the pastures. Much of the region is not even covered with scrub and the problem of fuel even for cooking is becoming serious. The rains are associated with the southward migration of the equatorial low pressure areas.

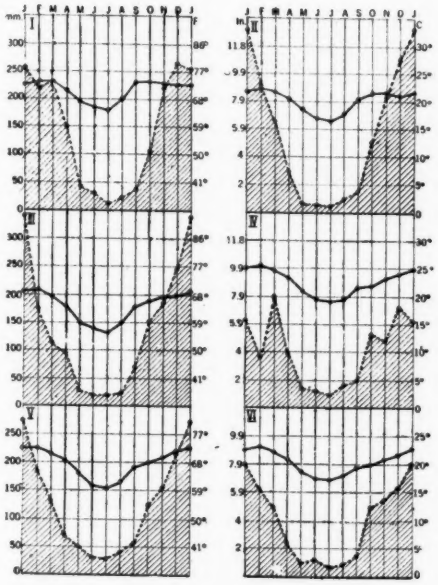

FIG. 6. Mean monthly temperature and rainfall for representative places in East Central Brazil. For ready comparison see table below.

Station	S. L.	W. L.	Alt. Mm.	Rainfall		Mean Temp. C.	Record in years
				mm.	inches		
I. Uberaba, Minas Geraes...	19° 44′	47° 56′	760	1591	63	21.4	6
II. Bello Horizonte, Geraes...	19° 54′	43° 55′	857	1500	59	20.2	10
III. Caxambu, Geraes.....	21° 58′	44° 56′	890	1467	58	17.7	6
IV. Campos, Rio de Janeiro...	21° 45′	41° 49′	10	1154	46	22.3	8
V. Meristella, Sao Paulo.....	22° 57′	45° 12ı	600	1244	49	19.5	6
VI. Vassonras, Rio de Janeiro	22° 24′	43° 49′	436	1070	42	20.7	8

affected Brazil very seriously. (3) The Paraguayan War of 1864-1870 took money from productive enterprises and the country has been very slow in recovering from this burden of debts. (4) The extraordinary high prices paid for cotton during our Civil War made cotton growing in Brazil much more profitable. Nevertheless,

during these 60 years the coffee crop about trebled and Brazil was producing a little more than half the world's crop.

After the establishment of the republic in 1889 and the financial stringencies of the early nineties, the expansion of the industry was very rapid, the export for 1896 being 5,969,000 bags and for 1902, 16,270,000 bags. This was due, in the main, to the discovery of the value of the diabasic soils in São Paulo. Altho the coffee has a wide growing range in São Paulo in altitude and soils, it does best at from 1,400 to 4,000 feet altitude and in the "terra roxa," dark red earth, and in the "massapé," a rich earth varying in color from yellow to dark red or even black. These two soils are by far the best and occur in more or less contiguous areas. It is the presence of these soils at their present topographic situation to which Brazil chiefly owes its leading industry, still possible of great expansion. The extraordinary rapid development[13] on these soils, however, soon brought about overproduction, then valorization[14] and a restriction in planting. Since then the export has remained under control somewhere between 12 and 13 million sacks, altho in 1919-1920 the export fell to 7,500,000 sacks. For the five years, 1906-1910, the average annual production of coffee in the world was 16,000,000 sacks, of which 13,000,000 came from Brazil, and of which 10,000,000 came from São Paulo.

São Paulo, of course, is the great coffee state, altho the crop

[13] The *Brazilian American*, March 29, 1924, says: To obtain an idea of how the coffee industry developed in São Paulo, it will be interesting to see the progress made in periods of ten years, compared with the production of other parts of Brazil, and other countries:

REGIONS	1885-1895	1895-1905	1905-1915
Santos	25,363,000	65,935,000	97,625,000
Rio and Victoria	31,299,000	36,073,000	31,157,000
Bahia	2,111,000	4,209,000	5,532,000
Central America, Mexico, Costa Rica	19,067,700	27,665,000	27,253,000
Antilles, Cuba, Porto Rico, Jamaica	2,103,400	1,548,000	1,082,000
Haiti	4,990,400	3,755,000	4,070,000
Dutch Indies	3,126,400	6,533,000	4,906,000
India	3,879,300	2,462,600	1,830,000
Africa	1,441,300	1,966,000	1,470,000

[14] See Denis, Brazil, Ch. X., The Valorization of Coffee. At the present time the valorization scheme is known as "The Permanent Defense of Coffee." See Wileman's *Brazilian Review*, March 12, 1924. See also: "Is Brazil Losing Her Coffee Grip?" in *The Tea and Coffee Trade Journal*, July, 1924.

is widely grown in Brazil. The following figures show the distribution.

AREA DEVOTED TO COFFEE IN BRAZIL[15]

(In thousand acres)

São Paulo	3,360	Paraná	50
Minas Gereas	970	Ceará	26
Rio de Janeiro	500	Parahyba	20
Espirito Santo	250	Santa Catherina	4
Bahia	126	Alagoas	1.6
Pernambuco	71	Maranhao	1.3

The acreage given here represents only a very small percentage of the potential coffee area estimated by Mr. Ukers at 1,158,000 square miles. The export by ports of the 1922-1923 crop was distributed as follows:

EXPORT OF COFFEE[16]

Ports	*Number of Sacks*	*Value £ Sterling*
Santos	8,263,428	30,785,217
Rio	3,290,294	9,995,082
Victoria	609,459	1,823,341
Bahia	163,234	531,084
Others	87,245	251,044
Total	12,413,660	43,385,768

Of this large coffee export the United States is by far the best customer, and thus also the leading nation in Brazil's export trade. In 1923 we took more than two-fifths of the total exports, and more than the total of the next five leading nations, France, the United Kingdom, Italy, Germany, and Holland. This, of course, was possible only because of the large amount of Brazilian coffee imported, more than $123,000,000 worth for the fiscal year 1924. Colombia is Brazil's nearest competitor, furnishing us, however, in 1922 only 14.8 per cent of the amount and 17.6 per cent of the total value, and for the fiscal year of 1924, 18 per cent of the amount and 22 per cent of the total value. The sustained high percentage of coffee imported from Brazil is shown in the following table.

U. S. COFFEE IMPORT FROM BRAZIL[17]

Year	*Percentage*	*Year*	*Percentage*
1913	74.0	1919	54.7
1914	74.2	1920	60.2
1915	69.1	1921	63.4
1916	70.7	1922	61.2
1917	68.7	1923	64.3
1918	65.0	1924	63.4

[15] Wm. K. Ukers, *Tea and Coffee Trade Journal*, Sept., 1923, p. 343

[16] Wileman's *Brazilian Review*, Sept. 26, 1923

[17] *Brazilian American*, Oct. 13, 1923

OTHER AGRICULTURAL PRODUCTS[18]

Coffee as an export crop overshadows all else to such an extent that the name Brazil suggests little else than coffee. However, export figures, most commonly seen, do not furnish an accurate picture of Brazilian agriculture. The agricultural products of Brazil for 1920-21 have been given in the census reports as having a value of 4,284,680 contos,[19] at normal exchange, considerably over a billion dollars. The importance of coffee in its relation to the total value of crops is only about one-fifth. The area, according to the same authority, devoted to the leading crops in thousands

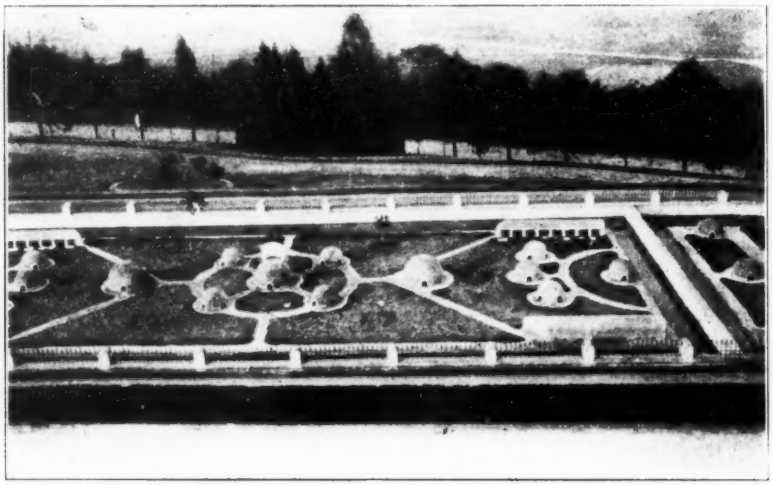

FIG. 7. A view of the snake gardens or "Butantan" near São Paulo. Not because there are so many poisonous snakes in Brazil but because so many people go barefoot it is necessary to make serums counteracting the snake poisons. The lives of many persons are thus saved annually.

of hectares is as follows: (1) corn, 3,389; (2) coffee, 2,225; (3) beans, 1,656; (4) sugar, 460; (5) cotton, 326; (6) rice, 310; (7) tobacco, 126; (8) wheat, 103. In value for 1922-23 as estimated by the Ministry of Agriculture the ten leading products in order of importance in thousand contos are (1) coffee, 2,852 contos; (2) maize, 1,027; (3) cotton, 629; (4) sugar, 523; (5) rice, 301; (6) feijão (beans), 221; (7) manioc, 135; (8) tobacco, 117;

[18] A new census volume on the agriculture of Brazil now out, makes more detailed studies possible. Other volumes are to appear later.

[19] *Brazilian American*, June 2, 1923

(9) matte, 116; (10) potatoes, 104.[20] Coffee is the money crop, but unfortunately the industry is such as to put it into the hands of relatively few people of great wealth. The bulk of the people in the country gain their sustenance from other sources and, in the main, have few opportunities for the accumulation of capital.

INDUSTRIAL DEVELOPMENT

Thru coffee, as the chief money crop of the nation, this section has become also the financial and industrial center. As coffee centers in the state of São Paulo, so does also the industrial development. According to the president of the State[21] manufacturing has shown a steady and most stable development. The value of the manufactured products for the last few years is given as follows: 1918, 556,801 contos; 1919, 712,662 contos; 1920, 795,915 contos; 1921, 804,378 contos. On January 1, 1921, there were the following textile mills in operation.

Kind of Mills	*Number*	*Capital, contos*	*No. of employees*
Cotton goods	54	106,188	17,823
Jute manufactures	4	11,800	4,540
Woolen goods	10	8,970	1,256
Silk ribbon	10	5,138	1,478
Hosiery	44	7,081	2,022
Laces	2	530	76
Sundry fabrics	6	323	138
Cotton waste	6	1,808	617
	136	141,888	27,950

Altho textiles lead in value by a wide margin other industries were started during the war and some of them have grown rapidly since. The leading articles manufactured in São Paulo during 1921 had a value in contos in order of importance: textiles, 358,450; boots and shoes, 75,075; beverages, 46,915; hats, 26,106; furniture, 24,986; tobacco, 23,452. The extraordinary growth in the manufacturing industry in the State is shown by the following figures: 1914, 212,231 contos; 1916, 358,912 contos; 1918, 556,801 contos; 1920, 795,915 contos; 1922, 1,037,662 contos.[22] This is equal to more than a four-fold increase in eight years. It is to be remembered, however, that this increase in value is greater than the in-

[20] *Brazilian American*, Dec. 1, 1923

[21] Wileman's *Brazilian Review*, Aug. 1, 1923

[22] *Brazilian American*, March 29, 1924

crease in quantity due to the general rise in prices and to the depreciation of Brazilian money.

The state of São Paulo is the cornerstone of Brazil's economic structure and without the wealth produced in the state, the nation would be ranked as a very minor one in spite of its great size. In 1922 the value of the exports from this state alone was nearly one-half (47.4 per cent) of the total exports of the country.[23] As the state leads all others so the city of São Paulo is not only the most active and most progressive city in Brazil but also "the fastest growing city in America."[24] The census of 1890 gave it a population of 65,000, that of 1920 a population of 638,000. The belief of the "Paulistas" that the city will become the leading metropolis in South America has many geographic factors in its favor. The most favorable of them all probably will be the unusual richness of its power resources. Altho at present only about 250,000 horse power is utilized in the state, it is conservatively estimated that 3,000,000 horse power[25] is available. What this may mean in a coal-less continent does not take a special divining power.

The prosperity of this section is also reflected in the immigration statistics.[26] The increase of Brazilian immigration of 1923 over 1922 is 51,946 or 149.2 per cent. Of the actual immigrants for 1923, the 86,763 newcomers were distributed by ports as follows: Santos, 42,760; Rio, 39,074; or more than nine-tenths entered two ports, with little question that they remained in this section. Other ports received the following quotas: Rio Grande, 1,642; Pará, 1,261; Bahia, 859; Pernambuco, 832; Paranaquá, 241: Florianopolis, 93. Among these immigrants are listed some 50 nationalities of which Portugal leads with 36.9 per cent, followed by Italians, 18.2 per cent; Spaniards, 11.7 per cent; Germans, 9.5 per cent, etc. Prior to the war Italian immigrants led and the change is regretted locally as the Italian laborer is preferred. The state owes much to Italy as it has already more than 1,000,000 Italians and their language is spoken in some of the country districts almost as commonly as the local vernacular.

This section, due to the many favorable geographic conditions, shows much initiative in the starting and developing of new indus-

[23] *South American Journal*, March 29, 1924

[24] Editorial, *Nation's Business*, June, 1924, p. 29

[25] Loc. Cit.

[26] Wileman's *Brazilian Review*, Apr. 9, 1924

tries, and thus to expand and to widen the productive resources of the country for which there is such immense scope. Such initiative is shown in the pushing of sericulture.[27] Freedom from taxation and a bonus are granted to get the industry established. Both the silk worm and the mulberry tree do exceptionally well, and success seems assured if labor conditions prove similarly favorable. A ready market for all the raw silk is unquestioned, for the output of local factories from imported silk has a value of 50,000 to 60,000 contos annually. Tea[28] is grown very successfully in various parts of both Minas Geraes and São Paulo. On one farm alone near Ouro Preto, 351,000 tea plants produce their annual crop and the owner hopes in a few years to have a million growing plants. The meat packing industry,[29] started in São Paulo in 1915, is becoming an important factor in the economic development of the country. The development has not been as rapid as was at first anticipated due in large part to the time necessary in the upbreeding of the native stock, altho even in 1918, under the generally disturbed trade conditions of the world, Brazil exported £12,000,000 worth of animal products.[30]

In the production of table fruits Brazil has as yet untouched resources altho a few industries are well started. The principal kind of fruit exported is the banana, and Santos is the leading port, exporting 3,090,000 bunches out of a total of 3,278,000 bunches in 1922. The industry is growing rapidly as shown by the exports: 1,869,000 bunches in 1918; 1,876,000 in 1919; 2,618,000 in 1920; and 2,561,000 bunches in 1921. Argentina is the best customer, taking 2,852,000 bunches in 1922. Brazil is exceptionally rich in the very large number of kinds of fruits.

The leadership of this section is as marked in its trade relations as it is in other respects. In general, the trade of the section is about two-thirds of the total. This relationship is shown in part by the table on page 180, given in £1,000,000 sterling.[31] In no

[27] See, The Silk Industry of Brazil, *The Brazilian Mail*, Dec., 1923

[28] See, Tea Culture in Brazil, *The Brazilian American*, Dec. 22, 1923

[29] See, A Short History of the Meat Packing Industry of Brazil, *Brazilian American*, Dec. 1, 1923

[30] *Commerce Reports*, Jan. 23, 1920, p. 455

[31] Based on government statistics in Wileman's *Brazilian Review*, May 9 and 30, 1923. As these statistics are based on port records, the figures for the east central section are a trifle too large as the coffee of Paraná passes out thru Santos and some of the products of the interior also pass out thru Santos and Rio.

Divisions		*1923*	*1920*	*1921*	*1922*
Amazonas,	Exports	10.2	5.6	2.6	3.0
	Imports	4.3	3.0	1.0	1.0
N. E. Brazil,	Exports	8.4	20.0	10.0	11.9
	Imports	10.8	16.8	9.0	7.2
E. C. Brazil,	Exports	42.0	70.9	39.8	48.3
	Imports	44.6	94.3	44.9	36.9
South Brazil,	Exports	4.4	10.6	5.9	5.1
	Imports	7.2	10.6	5.4	3.5
Interior,	Exports	.4	.4	.2	.2
	Imports	.4	.2	.1	.1
Total Brazil,	Exports	65.4	107.5	58.6	68.6
	Imports	67.2	125.0	60.5	48.6

section of Brazil and in few parts of South America, if any, is there more prospect of an increasingly rapid development. Geographic factors, in the main, are favorable, and unquestionably other diverting factors will be forced soon to swing into line for a similar expansive development in other sections.

Thruout Brazil favorable geographic factors gradually are being allowed greater freedom of play, and this is especially so in the state of São Paulo where radiates a spirit of progress which will bring about a better use of resources available, as well as bring new ones into being. The best evidence of this spirit is in the general interest in the extension of automobile roads and the newspaper space given to the opening of new roads and to the completion of important bridges. In July, 1923, there were in São Paulo as per a good roads report, "396 roads already finished and 72 being surveyed or in course of construction, the length of those already completed being 9,339 kilometers and of those being surveyed and constructed, 2,137 kilometers, a total of 11,476 kilometers."[32] This new spirit is also in evidence in the increased attention to more and better schools. Where the rural workman is too ignorant to use modern agricultural machinery for the up-to-date growing and harvesting of crops, there is little hope for increasing the quantity or the quality of the yield. The lack of progress and of vision because of the ignorance of the mass of people is unquestionably keeping dormant what would be otherwise favorable geographic factors.

This progress is also manifest in the increased commercial relationships with other South American countries. Much of this trade is a deliberate reaching out to profit by export and import,

[32] *Brazilian American*, July 21, 1923

while much of that with the United States or with England or Germany is the result of activities outside of Brazil. The unusually rapid development of this South American trade is shown in the following table by comparing 1913 and 1923.

EXPORTS TO SOUTH AMERICAN COUNTRIES AND TO THE UNITED STATES[33]

(Value in £1000 sterling)

Exports to	*1913*	*1916*	*1918*	*1920*	*1922*	*1923*
Argentina	3,104	3,394	9,297	3,848	4,694	3,943
Bolivia	—	5	1	1	—	1
Chile	180	151	186	457	282	251
Paraguay	20	2	20	4	5	35
Peru	4	1	14	3	20	32
Uruguay	1,513	2,698	6,362	4,778	2,447	2,402
United States	21,104	25,832	21,287	44,987	26,457	30,293
Grand Total	65,451	56,462	61,168	107,521	68,578	73,184

The overshadowing importance of this section is shown in the buying power of Rio de Janeiro and Santos with their rich and progressive hinterland. This and the effect of the world war on this section and the whole of Brazil, altho a non-participant and far removed from the scene of action, is shown in the following table. The effect and post effects of the war on the buying power are shown particularly well by comparing the imports of 1913, 1915, 1920, and 1922.

BRAZIL'S IMPORTS BY PORTS[34]

(In £1,000,000 Sterling)

Port of Entry	*1913*	*1915*	*1916*	*1917*	*1918*	*1919*	*1920*	*1921*	*1922*
Rio de Janeiro	26.16	12.60	17.84	19.38	24.54	33.99	57.39	26.86	22.91
Santos	18.21	8.09	10.73	12.12	13.76	22.30	36.84	18.32	13.88
Pernambuco (Recife)	4.03	2.06	2.46	3.47	3.77	5.99	8.21	3.30	2.95
Porto Alegre	2.52	.99	1.37	1.32	1.58	2.55	4.97	2.15	1.15
Rio Grande do Sul.	1.85	.78	.51	.82	1.05	1.76	1.57	1.37	1.06
Pará (Belem)	2.87	1.16	1.81	1.80	1.40	1.83	2.26	.75	.68
Ceara (Fortaleza)	.95	.20	.28	.29	.35	.57	.86	1.97	1.05
Bahia (São Salvador)	3.55	1.56	1.91	1.91	2.49	3.51	5.09	2.06	1.92
Amazonas (all ports)	1.44	.61	.90	.75	.48	.65	.73	.25	.19
Maranhão (São Luiz)	.57	.26	.27	.39	.31	.37	.68	.27	.19
Rio Grande do Norte (Natal)	.23	.06	.07	.05	.03	.10	.18	.24	.29
Alagoas (all ports)	.70	.40	.44	.45	.46	.73	1.18	.59	.40
Santa Catharina (all ports)	.54	.25	.31	.15	.22	.26	.80	.43	.24
Matto Grosso (All ports)	.37	.13	.14	.15	.16	.21	.18	.11	.10
Total	67.17	30.09	40.37	44.51	52.82	74.90	125.01	60.47	48.64

[33] Based on table in Wileman's *Brazilian Review*, July 9, 1924

[34] Wileman's *Brazilian Review*, May 30, 1923

GENERAL CONCLUSIONS

The preeminence of this section is unquestioned and geographic factors have much if not most to do with it. Coffee has made the section what it is, and, as a money crop for the region has no equal, for nowhere, in general, are natural conditions more favorable. The soils leave little to be desired, in food elements, or in both water and air drainage. The climate altho not ideal is most highly congenial except for the frost in some sections at rare intervals, or for the occasionally moist harvest season. "Nowhere else does it require less care"[35] and the labor is fairly abundant, low priced, tho somewhat inefficient. The distance to the port is not great nor are the railroad routes difficult over the plateau. The coffee goes down the 26,000 foot escarpment, and relatively few supplies from the outside world go back.

In addition to this Brazil, practically, has had a monopoly on coffee. Prices have been fixed and the markets of the world controlled. Wealth has accumulated and become concentrated; and with this wealth has come the wherewithal to make this section what it is. It is extremely doubtful whether any other crop could have been nearly so successful, evidence of the excellent adaptation of the crop to the region. If this preeminence in the coffee world ever should be taken away either due to the local indifference to the improvement of the quality of the coffee or to much superior grades produced elsewhere, or even tó some serious coffee plant disease, all of which are not only possibilities but are now actually at work undermining Brazil's supremacy, then the consequences for this section unquestionably would be most serious.[36]

The preeminence of this section is not without its ill effects nationally. There is such a vast gulf between the interests of this and other parts of Brazil that other sections look with suspicion on the activities of this region, and attribute much of the progress

[35] R. DeC. Ward, The Economic Climatology of the Coffee District of São Paulo, Brazil. *Bull. Am. Geogr. Soc.*, Vol. 43, p. 431 (1911)

[36] "It (Brazil) should not ignore the writing on the wall! China had the monopoly of tea at one time and Brazil on rubber! Where are these monopolies now?" Editorial, Wileman's *Brazilian Review*, August 20, 1924, p. 1099. "The Coffee Plague," "Stephanodores Coffeae Hag" is the most serious coffee problem Brazil yet has had to meet. "The zones infested with the pests possess over 80,000,000 trees and according to official calculation 10 to 20 per cent of the total crops of these zones will be lost." Wileman's *Brazilian Review*, Sept. 10, 1924. The life history of the pest is given in Wileman's *Review*, Oct. 15, 1924.

to governmental influence, and as paid for by their taxes. This section, on the other hand, does not always appreciate the problems of the other parts and feels that their own progress is hampered by the relative backwardness of the rest. The lack of economic unity is made very evident by the political disaffection in one part or another, especially during the past year. One is led again to the conclusions reached earlier: the country is too large for economic or political unity; also, to make a nation in defiance of geography requires a strong and wise leadership.

NATURAL RESOURCES OF SIBERIA*

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TERRITORY

According to authentic historical data, Russia's first contact with Siberia dates from the early part of the eleventh century. During the next four centuries or so military expeditions were frequent but it was only after the famous Yermak expedition, which resulted in the defeat of many of the Siberian tribes, in 1582 that the rule of the Moscow czars began to be recognized and this mainly in western Russia. This date marked the beginning of real territorial expansion. By incessantly penetrating eastward and southward, Russia claimed, toward the middle of the nineteenth century, all of the colossal territory now known under the name of Asiatic Russia. The latter comprises nineteen provinces and among these Tomsk, Tobolsk, Yeniseisk, Irkutsk, Transbaikalia and Yakutsk are known under the name of Siberia. In their turn, the two western provinces, Tobolsk and Tomsk, bear the name of Western Siberia, and all the rest are known as Eastern Siberia. In recent years, the extreme eastern part of Asiatic Russia began to be known as Russian Far East. The latter now includes the provinces stretching along the Pacific coast, namely: Amur, Maritime, Kamchatka and Sakhalin. The nine remaining provinces of Asiatic Russia are divided into two groups. The first is called the Region of Steppes, the second is known as Turkestan. The Steppes

*For fisheries see *Journal of Geography*, January, 1923

NOTE: This article is an abridgment of the author's original manuscript. As the abridgment was made by the editors they assume all responsibility for errors resulting therefrom. Editor.

and Turkestan, together with Transcaspia and Semiryechensk are also often called the Mid-Asiatic Possessions of Russia.

The total area of Asiatic Russia is 6,294,000 square miles, an area three times that of European Russia. It also exceeds considerably every country in the world, unless we count the British Empire, with its 10,800,000 square miles, as a single unit.

HUMAN RESOURCES

The settlement of Siberia by the Russians began in the time of Yermak, but the rate of colonization has varied greatly, at times even ceasing entirely.

Historically the growth in population in Siberia is represented as follows:

Years	Aboriginals	Russian Emigrants	Total
1622	173,000	23,000	196,000
1662	288,000	105,000	393,000
1709	200,000	299,277	429,000
1737	230,000	297,810	527,000
1763	260,000	420,000	680,000
1796	363,000	575,800	939,162
1815	434,000	1,100,500	1,534,500
1858	648,000	2,288,036	2,936,036
1897	870,536	4,889,683	5,760,169
1911	972,866	8,393,469	9,366,335

As can be readily seen from the above figures, the population in recent decades has increased very rapidly. This is explained by the continuous influx of emigrants from European Russia as well as by a very high natural increase.

Yet this immense area is still but thinly settled. Only about 10,000,000 persons occupy the vast area, i. e., less than one person to the square verst.* But even these 10,000,000 persons are distributed over the area extremely unevenly. The density of population is closely connected with the comparative advantages of localities for settled agricultural life. The population is grouped largely on a narrow tract of land, 200-400 kilometers wide, following both sides of the Trans-Siberian Railroad. Along this railroad almost three-quarters of the total population is concentrated. North and south of this tract of land the population rapidly thins out. It decreases also eastwards. Western Siberia in its soil and climatic conditions is more like European Russia than the eastern

*One square verst contains 0.662 English miles.

part. Consequently, conditions for agriculture are more favorable for the settler in Western than in Eastern Siberia, where he must first learn the local peculiarities and adapt himself to them. Moreover western Siberia is most easily reached and in closer contact with his old home and markets. Consequently the southwestern parts of Siberia, that is, the southern part of the province of Tobolsk and Tomsk and Altai, are more thickly populated than the southern counties of the Yenisei province. The population is particularly scanty toward the north. The taiga, or the great Siberian forest, is populated very thinly, and the extreme northern tundra is really a vast desert, where a very insignificant number of the nomadic tribes group themselves along the river banks and the ocean coast. Here sometimes for thousands of miles one does not encounter a single living soul. The urban population of Siberia is very small, only about 12 per cent of the total. In Western Siberia it is 9 per cent of the total, Central Siberia 13 and Russian Far East 26. Siberia is therefore a rural country.

AGRICULTURE

Agriculture existed in some parts of Siberia many centuries before the conquest of the land by the Russians. The ancient inhabitants of Altai evidently sowed cereals in the southern parts of the present Tomsk and Yeniseisk provinces. The Kalmicks engaged in agriculture in some of the most fertile parts of the steppe region and the Manchurian tribes engaged quite successfully in agriculture along the shores of the Amur. But judging from the fact that the first Russian conquerors of Siberia were compelled to provide themselves with imported bread, the extent of agriculture could not have been very great. The Russians, too, did not at once undertake agriculture. About the end of the sixteenth century agriculture began to develop among the Russian colonists. This at first was slow and it was a century before this branch of economic life had developed to such an extent that the Russian population ceased to resort to imported bread. Russian agriculture first developed in Tomsk and Tobolsk provinces, for the most part in those places where it was in existence from times immemorial among the Tartars. Then it expanded into the steppe region. In the twenties of the seventeenth century it spread to Yeniseisk province; in the forties of the same century, attempts were made in the northern parts of the Irkutsk province. Somewhat later it

was practiced in Transbaikalia and thence spread to the shores of the Amur. In Yakutsk province agriculture appeared very late, namely in the thirties of the nineteenth century. With the completion of the Trans-Siberian Railroad, agriculture was given a strong impetus. In 1905, for instance, there was in entire Asiatic Russia some 17,550,000 acres seeded to crops. In 1910 the number of acres increased to 26,600,000; and in 1911, 28,600,000 acres. Thus it is clearly seen that the introduction of railroads was a tremendous impetus to the development of agriculture.

At the present time, in spite of the severe winters and comparatively short summers, agriculture is very extensively developed. The unfavorable conditions, hindering grain culture, are balanced here by many favorable ones, namely: the vast land tracts and the comparatively slight depletion of the soils' fertility. The productivity of the Siberian soil is still so great that not only chernozem* soils of the southwest, but even the poorer soils of the other regions produce crops in good years considerably higher than those obtained on the best chernozem soils of European Russia. It is true, the yield, in consequence of the unreliable climate, varies quite strongly from year to year. There are years when the crops perish entirely in Western Siberia from drouth or summer frosts, and in Eastern Siberia from excessive moisture. But in good years the Siberian lands yield from 15 to 40 bushels of wheat per acre. If we take the average yield of the more agricultural regions of Siberia such as the Russian Far East, the figure will be far higher than in the most productive chernozem belt of European Russia.

Plowable land of Siberia totaled prior to the war 44,000,000 acres. But of course this area did not include all the arable lands which can be utilized in one way or another, and this area could be considerably increased with the introduction of some improvements, such as draining of swamps, irrigation, and the clearing of forests. In 1916 the actual area of crops seeded was about 23,500,000 acres, distributed as to crops as follows:

Products	In Acres
Spring wheat	11,700,000
Winter wheat	10,000
Oats	6,133,000
Winter rye	1,570,000

*Black soil.

Spring rye	1,229,000
Barley	733,000
Potatoes	306,000
Millet	304,000
Buckwheat	257,000
Flax	244,000
Hemp	143,000
Sun flower	98,000
Peas	52,000
Beans	26,000
Corn	20,000
Grasses	148,000
Other agricultural products	156,000

We can see from above that the chief product of Siberia in respect to the area seeded is wheat, covering almost half of the entire sowed land. Oats occupy the second place, rye, the third, barley, the fourth. Wheat and rye are produced in excess of the local demands as the following data (1916) show:

Area Sowed, of Wheat and Rye	14,509,000 acres
Production	9,170,496,000 pounds
Seed	1,224,354,000 "
Net production	7,946,138,000 "
Food requirement (540 pounds) (per person)	6,696,000,000 "
Surplus	1,250,138,000 "

Thus from the cereals of Siberia (rye and wheat) there should have been available for export about 625,000 tons.

The question whether or not Siberia will become an exporting country with regard to cereals or will cultivate them in quantity sufficient only for the consumption of the local population remains unsolved. The solution of the question is intimately connected with the general economic development of the country, with increased facilities for transportation and communication, increased manufacturing industry, with the development of intensive cultivation, as well as with the extent of future emigration from the neighboring European parts. All these are questions to which a definite answer is impossible at present.

The moist, cool climate is favorable to the growth of various grasses, and affords to Siberian farmers a large annual crop of hay. In 1916 about 22,000,000 acres were in meadows.

All these figures bearing upon the area as well as the yield in Siberia are only to a certain extent an index of the agricultural resources of Siberia and especially of its significance for the

world. Reasoning alone from the contemporary condition of agriculture in Siberia, it could be presumed that it will not play a large rôle in the future; but if we take into consideration the fact that at the present time the land exploited forms but a very small percentage of the total arable land of Siberia, if we recall the fact that Siberian agriculture is carried on an extensive instead of on an intensive scale, the future will appear in a totally different light. There is no doubt that with the introduction of all modern principles of agronomy, with the exploitation of all the extensive areas, with the development of the entire economic life of the country, the cultivation of its agricultural products will increase many fold.

Animal Husbandry

The livestock industry plays a very important rôle in the economic life of Russia, for it provides: first, working power, especially significant in field work where agricultural machinery is used to a very small extent; second, an abundance of manure, which, too, is significant, considering the small amount of artificial fertilizers in use.

Its chief value today arises from the large quantity of very important products it gives the Russian population, such as meat, milk, cheese, hides, wool, and bristle. In 1914 there were in Siberia nearly 10,000,000 sheep and goats, more than 8,000,000 horned cattle, 6,000,000 horses and 1,500,000 hogs.

But as statistical data of Russia with regard to domestic animals had many defects and were especially incomplete for Siberia where conditions for census taking were very difficult, the total number of domestic animals in Siberia was probably considerably larger than indicated above. Some authorities, such as Professor Serebrennikov, suppose that the total number was fully 40,000,000 head.

In Northern Siberia the only domestic animals to be found are the reindeer and sledge dogs but in the southern regions cattle raising and the raising of other domestic animals is widely spread and increased rapidly in the few years preceding the civil war. The climate here is comparatively temperate, with a sufficient quantity of precipitation for the growth of local pasture grasses. Consequently the cattle-raising regions of Siberia are: the steppe region (the Akmolinsk and Semipalatinsk provinces), the steppe

parts of the Tobolsk and Tomsk provinces, the region of the Altai Mountains, the southern and southeastern parts of Transbaikalia province and, finally, the southern part of the Yakutsk province.

On the whole, cattle raising in Siberia is much more developed than in European Russia, as can be seen from the following table:

Parts of Russia and Siberia	per 100 persons in 1914			
	horse	horned cattle	sheep	hogs
European Russia	20	29	32	10
Eight provinces of Siberia	55	74	65	16
Akmolinsk	63	74	136	5
Semipalatinsk	76	69	285	2

Siberia's wealth in cattle, its vast hay meadows and pastures, attracted the attention of many explorers who proposed to introduce improved methods of dairying. But the lack of transportation hindered the growth of this industry. Only after the opening of the Trans-Siberian Railroad did the dairies begin to grow very rapidly, especially in butter production. Butter production in Siberia began in 1893 in the Kurgan county of the Tobolsk province. In 1894 there were produced only 400 poods (1 pood equals 36 pounds) and a decade later the output increased to two million poods, valued at approximately $12,000,000. Several years later, 1912, the output increased still more, up to four and a half millions, valued at $34,000,000.

In the latter year about 81 per cent went to foreign countries and the remainder to European Russia. If we add to the exports the amount of butter shipped to the interior markets of Siberia, the entire production of butter of western Siberia was undoubtedly 5,000,000 poods, valued at $45,000,000. These data suggest the importance which the dairy industry of Siberia may attain in the future.

Forest Industry

There are as yet no exact data as to the area of forest in Asiatic Russia. In many parts of this vast country, extending from the Ural Mountains to the Pacific coast, the forests are still being used freely by the local sparse population and are as yet not explored. Nevertheless the present official estimates and the travelers' descriptions show that the timber resources of Siberia are exceedingly large.

The forest territory of entire Russia that has been surveyed is estimated at 1,599,615,000 acres and is distributed thru various regions as follows:

Locations	Acres	Per cent of total for Russia
Siberia and Steppe Region	1,081,874,000	69
European Russia	445,740,000	26
Middle-Asiatic Possessions	51,872,000	3.7
Caucasus	20,131,000	1.3

Dr. Ralph Zon estimates the forested territory of the entire globe to be 7,487,000,000 acres. The forests of the whole of Russia then comprise about 21 per cent and the forests of Siberia 14 per cent of the world's forest area. The figures for Russia do not include the unsurveyed forest areas. Dr. J. Goldstein of Moscow University thinks that the explored and unexplored forest area of Siberia is 2,711,000,000 acres. This gives Siberia a much larger per cent of the total for the world.

The above clearly indicates what a colossal economic resource Siberia has in its forests. More than 30 per cent of the explored Siberian forests is in Tobolsk province and about one-sixth in each of the Maritime, Tomsk and Amur regions. In these four provinces there is more than 80 per cent of the entire explored area of forests in Siberia. Thus the bulk of the timber of Asiatic Russia lies in western and eastern Siberia, the former accessible for Europe, the latter for the Pacific countries of Asia. Until recent years, and more so at this time when economic life is disorganized, the conditions for utilization of the forests were so unfavorable that most of the forests of Asiatic Russia remained untouched. This is due to the small demand for timber on the part of the local and very sparse population, to poorly developed industries that use timber, to the lack of adequate transportation facilities, and to the undeveloped condition of the export trade. Indeed practically no timber is exported.

The forests while not yielding a great income at present are very promising for the future, and perhaps not very distant future. Besides the annual growth is enormous, estimated at 10,786,000 cubic feet. According to estimates of some experts there could easily be shipped from Siberia to foreign markets six billion cubic feet of lumber annually, a figure well within the annual increase. This output could be distributed geographically as follows: from the forests of the Russian Far East about five billion

cubic feet; from the basin of the river Yenisei about five hundred million cubic feet, and from the Obi basin some six hundred million cubic feet. The above clearly indicates that from the point of view of foreign trade of lumber the markets of the Russian Far East, at least in the nearest future, present possibilities of the greatest interest.

MINERAL RESOURCES

Siberia has long been noted for its abundance of metals and minerals. In truth there is not a mineral that cannot be found in Siberia. The minerals now known are found almost exclusively in its mountainous parts. Most of the deposits are found in the southern part, that is, in the regions of the Altai and Sayan mountains, in Transbaikalia and in the Far East. The Altai Mountains are especially rich, being in this respect similar to the Ural Mountains. The mineral resources of the Altai are chiefly concentrated on the northwestern slopes and equally in the ridges, stretching far into the plains. Here one finds an abundance of silver-lead and copper ores, coal, gold, and iron ore. The Altai Mountains, like the Ural Mountains, have, in addition to gold, large deposits of valuable platinum ore. Finally, the Altai region abounds in mineral springs. Let us now take up more in detail the distribution of mineral deposits on the Siberian territory.

Gold occupies the first place among the mineral resources of Siberia, being widely distributed. Gold mining in Siberia began in 1813 when about 36 pounds were produced. Since then the increase in output has been great until it now has become the chief source of supply for the Russian Treasury.

Between 1878 and 1910 inclusive, 56,400 poods of gold, according to official reports, were mined in Siberia, but the actual output was undoubtedly much greater for only about 50 to 60 per cent of the actual output was registered. In 1910 Russia—European and Asiatic—produced about one-tenth of the gold of the world. Its output was valued at $432,300,000. The present output (before the World War) is no measure of the potentialities of the industry. The majority of the deposits are not worked at all and in other localities the deposits are worked in a primitive and old-fashioned way.

Silver was at one time the chief product of the Siberian mining industry. The centers of its mining were: the Nerchinsk (Transbaikalia Province) Region and the Altai Mountains. In

Transbaikalia the working of silver deposits began in the early seventeenth century. Here traces of gold and silver were quite accidentally discovered in 1699, thanks to the marmots which threw out the ore in digging their holes. In 1704 mining of silver was begun for the first time, and was continued quite successfully resulting in a large output. Thus from 1704 to 1864 the total output of the Nerchinsk region was 26,708 poods. In the Altai Mountains the working of silver began somewhat later, namely in 1745, and the region soon surpassed Transbaikalia in its output, 123,000 poods of this metal being mined from 1745 to 1860. On the whole, the annual output of silver in all Russia in 1914 was estimated at 1,110 poods, of which 433 poods were mined in Siberia, that is, 39 per cent of the total output.

Lead and zinc are found in many parts of Siberia. The Akmolinsk and Semipalatinsk provinces are especially rich in lead, but the largest commercial output comes from the mines of the Maritime Province in the region of Sikhota Alin Mountain, not far from St. Olga Bay. Almost all the output was exported, prior to the war, to Amsterdam, and in the late years to Japan.

Coal is also found in Siberia in great quantities; its deposits are found everywhere, from the extreme west to Sakhalin, but not everywhere is it ready for mining.

Coal deposits in Asiatic Russia are estimated by experts in the following amount:

Basin	In Metric Tons
Kuznetsk	250,003,800,000
Irkutsk	150,000,000,000
Minusinsk	872,500,000
Kirgiz Steppes	1,000,000,000
Sakhalin Island	2,002,000,000
Maritime	270,000,000
Yeniseisk	170,000,000
Amur	631,380,000
Transbaikalia	200,000,000
Tunguska	104,530,000
Yakutsk	650,000
Total	405,254,860,000

The presence of iron ore is known in numerous regions of Siberia. Very rich deposits are found in the Altai, where they have been mined since ancient times. An excellent magnetic ore is found along the river Oka in the Irkutsk province. Huge quan-

tities of the same are known to occur in Semipalatinsk Province, the ore of this region being of high grade (70 per cent pure iron).

Rich deposits of brown ore (limonite, turgite and gothite) are found in Transbaikalia. They are large and of high grade. The most significant places in Eastern and Central Siberia with respect to deposits of iron ore are: Abakan (on river Abakan, tributary of Yenesei), Nikolaevsk (on the river Angaria), and Petrovsk (in Transbaikalia Province). The possible deposits of Abakan are estimated to be 200,000,000 poods, those of Nikolaevck to be 180,000,000 poods and those of Petrovsk, 2,000,000 poods. A very large deposit of iron ore is found in Irbin, situated in Minusinsk district and estimated at 100,000,000 poods. The Altai mountains possess small deposits. Altho the deposits of Siberian iron ore are large, they are smaller than those in the Urals and in the south of Russia. The Russian Far East is also very rich in iron ore, the reserves are estimated at 341,500,000 poods, more than 80 per cent being magnetite and hematite. In spite of the abundance of rich iron deposits, the output in the Russian Far East has been insignificant.

The beginning of copper mining in Siberia dates from 1726 when the first mines were discovered in the region of the Altai Mountains. The working of copper soon began in other places of western Siberia as well, where from the opening of the first mines up till 1876 ten million poods were mined. Altho the presence of copper is established in many places in Siberia, it is mined there in very small quantities, and only during the World War was there great activity in mining. Extensive deposits of graphite exist in northwestern Siberia near the junction of the Kureika and Yenisei rivers, ninety miles from the mouth of the latter. The graphite area forms a horizontal plateau, the elevation of which varies from 20 to 50 feet above the normal level of the Kureika. The plateau contains two layers of graphite, which is of solid steel-gray color, soft and of an excellent quality suitable for the manufacture of pencils.

Rich graphite deposits are known in other parts. The best known are at Andara, approximately 180 miles southwest from Irkutsk, on the Chukotsk Peninsula, near Cape Dezhnev, in Semipalatinsk Province; in numerous parts of Transbaikalia, in the basin of the river Amur, and finally, on the eastern short of Sakhalin.

Salt is found in Siberia in large quantities and in many forms, such as rock-salt beds, salt springs and salt lakes. But in spite

of the fact that western and eastern Siberia are rich in salt deposits, in spite of the fact that the fishing industry is extremely dependent upon salt of high quality, the output of salt in Siberia in 1912 was very small. The chief salt deposits are in interior Siberia, while the largest demand for it is on the Pacific coast, where it is needed for the salting of fish. Owing to the expensive transportation, the fishers use chiefly foreign imported salt, from European Russia, Japan, Germany and elsewhere.

In many places of Siberia the presence of Glauber's-salt of high quality is established.

Despite the tremendous area of Siberia, the presence of oil has so far been established in but one place, the western shore of Lake Baikal. The extent of the pools here is not determined as yet.

In the territory of the Russian Far East, oil fields are known only within the limits of the Russian half of Sakhalin. The first information concerning Sakhalin oil goes back to the seventies of the last century. But investigations have been carried on very slowly and Sakhalin is yet far from being explored in this regard. The oil bearing fields are situated in the northen part, chiefly along the eastern coast of the island. Their industrial importance is as yet unknown. In several places, oil derricks have been built, and drilling operations begun. On the basis of available data, it is believed that there are perhaps very considerable oil-filled strata in many parts of Sakhalin.

In Kamchatka, not far from the Tigil River, signs of oil are also found. Oil has not yet been discovered in other localities of the Russian Far East.

The production of various metals in Siberia for 1910 and their importance in comparison with the output of entire Russia is indicated in the following table:

	Production in Poods	Percentage of total production of entire Russia
Gold	2,073	80.0
Silver	6	4.6
Lead	217	0.3
Copper	234,264	15.3
Iron	115,681	0.5
Coal	101,411,927	5.8
Salt	8,868,709	7.8
Glauber's-salt	80,948	35.4
Graphite	560	100.0
Mica	86	100.0

In addition to all of the above-mentioned minerals, Siberia is rich in deposits of other metals and precious stones, but their production was undeveloped because of the backwardness of the economic life of Siberia.

The above short survey of the mineral resources of Siberia shows the great hidden wealth of this country which remains still unutilized. The causes retarding the growth of the mining industry in Siberia are: lack of means of transportation, low stage of cultural development of the population, lack of capital, old mining methods, scantiness of technical knowledge among the local population, general lack of spirit of enterprise, limited demand in the local markets, and backwardness of industries in Siberia in general. There is no question but that in the future with the increase of population, with the growth of transportation lines, with the rise of manufactures, mining will become the basis of the economic progress and power of Siberia.

CZECHOSLOVAKIA AND GEOGRAPHIC UNITY

To the Editor of the Journal of Geography:

The leading article of the January issue of the Journal of Geography begins with this sentence: "Czechoslovakia has a noteworthy geographic unity." Allow me to comment on this statement.

The peace treaty, which accorded the former parts of Hungary to Czechoslovakia, was based on the principle of self determination of peoples, broadly speaking on the national principle, not on one of geography. If we look at the map, this fact will be immediately recognized. The Carpathian Ranges, like a mighty arch, cut across the middle of the new state allowing practically no communication from Bohemia to Slovakia, except by descending into the Danube valley, and then following its tributaries upward into Slovakia. The author of the article states that "the connections have been greatly improved." The only pass from Jablonica-Moravia to Slovakia is the Jablonka, except the Poprad valley, which is still further east and leads into Poland. The greater part of Slovakia is very far from its new capital and can be reached only by a roundabout way.

All the rivers of Slovakia flow southward into the Danube (except the Dunajec and the Poprad, which are small mountain streams that join the Vistula). In consequence of this fact the economic life of the highland has always been tied to that of the Hungarian plain. The Slovak lumbermen came down on their rafts in late spring into the very heart of Hungary; sold their timber there, and secured jobs during the summer harvest time. The wages, paid partly in grain, provided their subsistence for the following winter. Due to the recent political division, the Slovak peasant becomes more and more dependent upon factories in Bohemia for employment and leaves Slovakia permanently.

Another factor might be mentioned: The so-called land reform acts give advantages to the former soldiers of the Czechoslovak legions, and to the returning emigrants from

the United States. So there is little hope for the Slovak peasant to develop the higher type of agriculture needed in consequence of his exclusion from the Hungarian granary.

The statement of the author, taking the whole Slovak highland as the basin of the Vah river, also requires correction: the drainage area of the river is about 5000 sq. km.; the area designated as the Vah river basin in figure 2 of the article is 50,000 sq. km.; on the other hand, the valley of the Vah is defined by the three ranges of the Magura Mts. and the Little Tatra so closely, that its principal tributary, the Nitra, can join it only near its mouth. The other streams have nearly as extensive drainage areas as the Vah. Yet, all of them are separated by the rough relief of the highland, giving no possibility of connection or unity, other than that afforded by the central Hungarian basin.

The other statement of the author "Slav races having a common literary language predominate" needs some correction also. It is a mistake to think they have the same language; it is a greater one not to distinguish between Ruthenians and Slovaks, who belong to entirely different branches of the race, and possess different religions and characteristics. This was acknowledged by the Peace Treaty in establishing a Ruthenian commonwealth in the high ranges of the Carpathians, possessing a considerable degree of home rule, under the name Russinsko. The Ruthenian people are Greek orthodox, the Slovaks are Protestants and Catholics; the Czechs are Hussite Protestants.

Thus, it will be noted that the rivers of Bohemia flow northward into Germany, that those of Slovakia flow southward into Hungary, and between Bohemia and Slovakia a high mountain range interposes a barrier, possessing only one pass available for a railway, while the eastern portion of the new Republic is separated from both Slovakia and Bohemia by an extension of the Hungarian Plain and by racial and religious differences.

I hope you will pardon me in bringing this matter to your attention, but I have been assured that you are desirous of having all statements in the *Journal of Geography* geographically correct.

Yours sincerely,

ARTHUR T. SIBELKA

CZECHOSLOVAKIA: A REJOINDER

The following statements are made in reply to Mr. Arthur T. Sibelka's criticisms of my article, "Czechoslovakia: Factors of Geographic Unity" in the January number of the *Journal*.

The sentence "Czechoslovakia has noteworthy geographic unity," is challenged. I believe even a pessimist will admit there is some geographic unity within Czechoslovakia. The section "Factors of Geographic Disunity," pp. 7-8 in my article, mention the difficulties in communication resulting from mountain ranges athwart the middle of the country. There are twelve separate railroad lines across the Moravo-Slovakian boundary. Two others pass from Silesia into Slovakia. These roads are distributed over the country with marked uniformity, tho in a less dense network than in Bohemia or Moravia. Only one of these roads is in the Danube lowland. All the others pass thru mountain or foothill country. For detailed information I beg to refer to "The Czechoslovak Railway Almanack," published early in 1924, and "The *Central European Observer*"—a political and commercial newspaper published weekly in Praha (Prague)—issues of July 14, 1923; Oct. 20, 1923; and Jan. 1, 1924. The impression that difficulties in the way of east-west rail transportation are as stupendous

as implied in the criticism, seems to result from the lack of a large scale detailed map, such as "Republique Tchecoslovaque, Autoriés; Carte d' Europe 1:1,000,000. Serv. Géog. de l' Armée Française. Ottův Zeměpis Atlas, Praha-Übersichtskarte von Mitteleuropa. 1:750,000. Vienne."

Drainage conditions and the change in political outlook are also described on p. 8 of my article. The disturbed economic life referred to in the criticism is offset by the relatively rapid developments in manufacturing and exploitation of natural resources, and improvements in rural life in Slovakia. The special attention given by political and industrial leaders to Slovak problems, leads me to believe there is no imminent danger of serious depopulation of Slovakia. Further, "Deputy Juriga, a member of the administrative committee and also of the Hlinka Oppositional party—a fact which gives his support still greater value—expressed his warm appreciation of the results of the Land Reform in Slovakia and declared that the Slovak people had gained more in the last five years than it had done for centuries previously." (*Cent. Europ. Obs.*, Oct. 18, 1924.) And more specifically, please note in the Jan. 16, 1925 issue: "In Slovakia the land was almost exclusively in the hands of Magyars, whilst the Slovaks lived in the hilly areas of the Carpathians which were not fertile enough to support them. Hence the Slovaks formed the largest proportion of the emigrants. The providing of this poor Slovak population with land allotments means freeing them from poverty and misery and preventing their emigration to oversea . . . . the Magyar minority have not been excluded from the benefits of the Land Act. . . . . "

In my article (p. 3) reference is made to the alluvial lowland of the Vah River basin in southwestern Slovakia, but there is no statement which takes the whole Slovak highland as the basin of the Vah. I regret not having seen the galley proof of my article. The omission of a number of place names in Figure 2, the failure to distinguish between Ruthenians and Slovaks, and the use of the words "Moravia River" instead of Morava, and "marked" instead of marketed, are due to this circumstance. I, therefore, assume all responsibility for these errors, and am glad for an opportunity to account for them. In this connection one may note that in Mr. Sibelka's criticisms there are three places in which quotation marks enclose wordings at variance with those of my article.

"Slav races having a common literary language" (p. 1 of my article) follows from readings in "An Open Letter to Thomas G. Masaryk, President of Czechoslovakia" by fourteen representatives of Slovak organizations in America; Isaiah Bowman, "New World"; Dr. N. Van Wijk, "The Republic of Czechoslovakia"; and Jaroslav Císar and Frantisek Pokorný, "The Czechoslovak Republic." From the latter source (p. 18) is taken the following: "Racially and linguistically the Czechs and the Slovaks are one people, the differences, if any, being psychological and not racial, and caused by long political separation into two states. Their languages are so similar that one can be said to be a dialect of the other; . . . . How small the difference between them is, appears from the fact, that up to recently the Slovaks used the Czech for their literary language; and a Czech from Western Bohemia will without difficulty understand a Slovak from Eastern Slovakia and vice versa—the difference being much less than the difference between the dialect of Somerset and that of Yorkshire, ..."

I am aware of the religious differences, and agree with Mr. Sibelka that they should have been briefly mentioned. I have dealt with the religious question at considerable length in a later and much more comprehensive article entitled "Czechoslovakia: Some Important Adjustments to Natural Environment."

Allow me to express my appreciation of Mr. Sibelka's interest in the article "Czechoslovakia: Factors of Geographic Unity."

BESSIE C. ENGLE

SUMMER COURSES IN GEOGRAPHY

The following educational institutions sent data of summer school work in geography.

University of Colorado, Boulder, Colo. June 22—July 27; July 28—Aug. 28

Climatology. First Term. Associate Professor Visher
Geographic Influences. First Term. Professor McCourt
Principles of Human Geography. Second Term. Associate Professor Visher
Geography of Commercial Commodities. First Term. Associate Professor Visher
Geography of Trade. Second Term. Associate Professor Visher
Geography of Europe. First Term. Associate Professor Visher
Geography of South America. Second Term. Associate Professor Visher
Advanced Physiography. First Term. Associate Professor Worcester
General Geology. Either Term. Professor McCourt and Associate Professor Worcester
Field Geology. Either Term. Assistant Professor Sperry and Associate Professor Worcester
Historical Geology. First Term. Assistant Professor Sperry
Minerals and Rocks. First Term. Assistant Professor Sperry
Problems in Rocky Mountain Geology. First Term. Professor McCourt
Field Courses in Geology at the Mountain Laboratory. Second Term. Professor McCourt and Assistant Professor Sperry

Headquarters are at Science Lodge adjoining the University. Camp is near the Continental Divide, and about twenty-five miles from Boulder. The cost is $120, including all expenses. Students desiring to register should consult with Professor W. E. McCourt, by mail or in person before July 16 (Address Washington University, St. Louis, Missouri, until June 19, after that date, University of Colorado, Boulder, Colorado). Courses are offered to three types of students: beginners, advanced, and graduate. The last week of the courses is devoted to a trip thru the Rocky Mountain National Park.

State Normal School, Lewiston, Idaho. June 8—Aug. 7

Principles of Geography. Professor Ernest E. Holmes
Methods in Geography. Professor Ernest E. Holmes
Geography for Primary Grades. Professor Ernest E. Holmes

Northwestern University, Evanston, Ill. June 22—Aug. 15

Physiography and Geology (Introductory Course). Mr. Stark
Industrial and Commercial Geography. Professor Peattie
Physiography of the United States. Professor Grant
Geography of Europe. Professor Peattie
Field Course in the Lake Superior Region. Professor Grant

A four weeks course beginning about Aug. 14; credit (including detailed report), 6 semester hours; Duluth and the Mesabi and Vermillion iron ranges will be visited and the main work will be in the vicinity of the International Boundary north and east of Duluth. Travel will be by canoes. Graduate students may obtain material for master's theses. For full information address Professor U. S. Grant, University Hall, Evanston, Ill.

University of Chicago, Chicago, Ill. June 22—July 29; July 30—Sept. 4

Ocean Trade and Transportation. First Term. Associate Professor Colby
The Teaching of Geography in Senior High Schools. First Term. Mr. Leppard
The Teaching of Geography in Junior High Schools. First Term. Mr. Leppaard
Studies in the Urban Geography of the British Isles. First Term. Professor Ll. R. Jones
Geography of Africa. Second Term. Assistant Professor Whittlesey
Field Course in the Green Bay Region. First Term. Assistant Professor Whittlesey. (Four weeks will be spent in the field, beginning June 22.)
Graphics and Cartography. First Term. Professor Goode
Education 396. Investigations of Problems in the Teaching of Geography. First Term. Assistant Professor Parker
Research Course. Professors Barrows and Goode, Associate Professor Colby, and Assistant Professors Whittlesey and Platt
Dissertations in Geography. Professor Barrows
Elements of Geography for Senior College Students. First Term. Assistant Professor Platt
Economic Geography for Senior College Students. Second Term. Assistant Professor Platt
The Technique of Teaching Elementary Geography. Either Term. Assistant Professor Parker
Geography of Europe. First Term. Professor Goode

Geographical Aspects of the Development of Certain Leading British Industries. First Term. Professor Ll. R. Jones
Historical Geography of the United States. First Term. Professor Barrows
Economic Geography of North America. First Term. Associate Professor Colby

Chicago Normal College, Chicago, Ill.

The Teaching of Geography in the Elementary Grades. Dr. Frederick K. Branom and Miss Mary Dopp
The Teaching of Geography in the Junior High School. Dr. Frederick K. Branom
Geography of North America. Mr. Ira N. Van Hise
Georaphy of North America. Mr. Ira N. Van Hise
Geography of South America. Mr. Ira N. Van Hise
Commercial and Industrial Geography. Miss Mary Dopp
Geography of Europe.
Geography of Asia.

Western Illinois State Teachers College, Macomb, Ill. June 8—July 17; July 17—August 26

Methods of Teaching Geography in the Grades. First Term. Mr. Herbert Bassett, Miss Katherine Thompson and Mr. Claude Hesh
College Physiography. First Term. Mr. Claude Hesh
Conservation of Natural Resources. Second Term. Mr. Herbert Bassett
College Physiography. Second Term. Mr. Herbert Bassett

University of Illinois, Urbana, Ill. June 22—Aug. 15

Industrial and Commercial Geography. Mr. Cox
Weather and Climate. Mr. Cox
53a Advanced Economic Geography. Dr. Blanchard
53b Advanced Economic Geography. Dr. Blanchard

Indiana State Normal School, Terre Haute, Ind. June 22—Aug. 29

Recent Political Geography. Associate Professor W. L. Perkins
Commercial Geography. W. T. Chambers
Teaching of Geography in the Grades. Professor B. H. Shockel
Elementary Astronomy. Professors J. F. Mackell and B. H. Shockel
Physiography. A. E. Moery
Visual Education. Professor B. H. Shockel
North America. Mr. W. T. Chambers
Elements of Geography. Mr. W. T. Chambers.
Elementary Mineralogy and Economic Geology. Associate Professor W. L. Perkins
Elements of Geology. Associate Professor W. L. Perkins
Field Geography and Geolog. Associate Professor W. L. Perkins and Professor B. H. Shockel.
Elements of Geography, Section B. Mr. W. T. Chambers

Clark University, Worcester, Mass. July 6—August 14

Field Physiography. Wallace Walter Atwood, Ph.D.
Weather and Climate. Charles Franklin Brooks, Ph.D.
Economic and Commercial Geography. Vernon Clifford Finch, Ph.D.
Geography in Education for Special Teachers. Douglas Clay Ridgley, M.S.
Regional Geography of North America. Wallace Walter Atwood, Ph.D.
Advanced Climatology. Charles Franklin Brooks, Ph.D.
Climates of the World. Charles Franklin Brooks, Ph.D.
The Teaching of Geography in the Elementary Schools. Douglas Clay Ridgley, M.S.
New England Field Trip. A Motor Bus trip for two weeks beginning August 15. Henry H. Russell
The Berkshires and Hudson River Valley. A Motor Bus trip for two weeks beginning August 15. Douglas Clay Ridgley, M.S.
St. Lawrence Valley and Maritime Provinces. Field trip for four weeks, beginning August 15. Clarence Fielden Jones, Ph.D.
The Diplomatic Background of the World. William Leonard Langer, Ph.D.
The History of the United States to 1865. James Blaine Hedges, Ph.D.
The History of the United States since 1865. James Blaine Hedges, Ph.D.
Economic History of the United States. Samuel J. Brandenburg, Ph.D.
World Trade. Vernon Clifford Finch, Ph.D.
Geography of the World's Work. Wallace Walter Atwood, Ph.D.
Seminar in Geography. The Geography Staff.

Research in Regional Geography. Wallace Walter Atwood, Ph.D.
Research in Climatology. Charles Franklin Brooks, Ph.D.

University of Michigan, Ann Arbor, Mich. June 22—Aug. 14

Elements of Geography. Assistant Professor P. E. James
Geography of Commercial Production. Mr. R. B. Hall
Geography of Asia. Mr. R. B. Hall
Problems in Tropical Geography. Assistant Professor P. E. James
Research in Special Work. Credit to be arranged. P. E. James and R. B. Hall
Field Course in Geography. Assistant Professor K. C. McMurry
Advanced Field Course. Assistant Professor K. C. McMurry

These two courses are given in Kentucky and Tennessee. The work consists of a systematic, quantitative, geographic survey in a region of diversified environment, and a reconnaissance trip thru eastern Kentucky and Tennessee. The first is for elementary students; the second is for advanced students who have had field experience, and consists largely of individual work. The courses begin at Lexington, Ky., June 16, and the trip is ended July 25 at Knoxville, Tenn. Detailed information may be secured thru the instructor.

State Teachers College, Bemidji, Minn. June 10—July 22

Geography of North America. Professor Roy Schofield
Geography Methods. Professor Roy Schofield
Economic and Commercial Geography. Mr. E. E. Everly
Geography Methods. Mr. E. E. Everly

State Teachers College, Mankato, Minn. June 10—July 22

Elements of Geography. (Two sections) Miss Sletten and Miss Jasperson
Geography of North America. George J. Miller
Technique of Geography Teaching. George J. Miller

University of Minnesota, Minneapolis, Minn. June 20—August 1

Human Geography. A Study of the Factors of the Physical Environment and their Effect on Human Activities. Dr. Davis and Assistant
Geography of Commercial Production. The Principal Commodities of World Trade with Reference to Areas of Origin and Consumption, and the Geographic Elements in their Production. Dr. Davis and Assistant

University of Missouri, Columbia, Mo. June 6—Aug. 1

Principles of Human Geography. Associate Professor Sam T. Bratton
Geography of North America. Professor E. B. Branson
Commercial and Industrial Geography. Professor E. B. Branson
Method and Content in Geography. Associate Professor Sam T. Bratton
Seminar in Geography. Professors E. B. Branson and Sam T. Bratton

University of Nebraska, Lincoln, Nebr.

First Term. June 8—July 15

Principles of Geography. Professor N. A. Bengtson and Associate Professor E. E. Lackey
Geography of the United States. Professor N. A. Bengtson
Field Geography (Lincoln and Lower Platte Valley). Associate Professor E. E. Lackey
Geography of Nebraska. Associate Professor E. E. Lackey
Geography of European Countries. Professor N. A. Bengtson
Educational Geography. Miss Lyllis Wetmore
Seminar in Geography. Professor N. A. Bentson, Associate Professor E. E. Lackey, and Miss Esther S. Anderson

Second Term. July 16—Aug. 21

Principles of Geography. Associate Professor E. E. Lackey
Physical Geography. Miss Esther S. Anderson
Geography of the United States. Associate Professor E. E. Lackey
Economic Geography. The Agricultural Industries. Miss Esther S. Anderson
Geography of Nebraska. Miss Esther S. Anderson
Methods in High School Geography. Associate Professor E. E. Lackey
Seminar in Geography. Associate Professor E. E. Lackey and Miss Esther S. Anderson

Cornell University, Ithaca, New York. July 6—Aug. 14

Physical Geography. Professor von Engeln
Commercial Geography. Professor von Engeln

Regional Geography. Professor Brown
Principles of Physical Geography. Professor Brown
Geology. Associate Professor Decker
Mineral Resources. Associate Professor Decker
Physical Geography, Laboratory Course. Professor Leighton, Miss Brotherhood, Miss Van Order
Geology Laboratory Course. Professor Leighton, Miss Brotherhood, Miss Van Order
Geography of New York State. Mr. Abrams
Geography and Geology. Field Course. Professor Leighton and other members of the department

This course consists of five afternoon trips, two all-day trips, and one two-day trip to Niagara Falls. The region about Cornell University is especially rich in phenomena of physiographic and geologic interest and scenically very attractive; waterfalls, gorges, high summits, broad prospects abound and are encountered immediately on the campus boundaries. The University is in the center of the Finger Lakes District of central New York.

Ohio University, Athens, Ohio. June 15—Aug. 15

Geography and Environment. Professor C. E. Cooper
Geography of South America. Professor C. E. Cooper
Geography and Methods for Upper Grades. Professor C. E. Cooper
Geographic Influences in American History. Assistant Professor La Fleur
Geography and Methods for Lower Grades. Assistant Professor LaFleur

Cleveland School of Education and Western Reserve University, Cleveland, Ohio. June 22—July 31

Principles of Elementary School Geography. Miss Matchett
Regional Geography of the United States. Miss Matchett
The Geography of South America. Miss Matchett
Conference in the Teaching of Geography. Mr. Gregory and others
The Geography of Europe. Mr. Gregory
Industries of Cleveland. Mr. Gregory and Mrs. Jacober

A field course in which twenty-five major industries are studied to obtain first hand information and give opportunity to study materials. Each industry is given a special study, which is embodied in a report.

Ohio State University, Columbus, Ohio. June 22—Sept. 2

Principles of Geography. First Term. Assistant Professor Carlson
Economic Geography. Second Term. Professor Van Cleef
Historical Geography and Commerce of the United States. Assistant Professor Carlson
The Geography and History of Commerce. Professor Van Cleef
Research in Geography and Commerce. Professor Van Cleef and Assistant Professor Carlson

Oberlin College, Oberlin, Ohio. June 17—Aug. 5

Geology and Physical Geography Field Course. Professor Geo. D. Hubbard

Students participating in this course work from a camp near Narrows, Virginia, in the complexly folded and faulted Paleozoic rocks, live in tents, make topographic and geologic maps, structure sections, collect and study rocks and fossils, and write a report describing and discussing the geology of the area, under the personal supervision of one who has given such a course almost annually since 1911, and seven summers in this vicinity. No detailed work has ever been published on this area. Expense including tuition, subsistence and laboratory fees, but not transportation, about $115.

State Normal School, Edinboro, Penn. June 16—Aug. 15

Methods in Geography. Nelle G. Hudson
Economic Geography of the United States. Nelle G. Hudson
Geographic Influences in American History. Hazel M. Ketcham
Regional Geography of North America. Hazel M. Ketcham

University of Pennsylvania, Philadelphia, Penn.

Resources and Industries of the United States. Assistant Professor H. F. James
The Principles of Geography. Miss Adler
Geographic Methods. Miss Adler
Manufacturing Industries of the United States. W. R. Hockenberry

University of Pittsburgh, Pittsburgh, Penn. June 29—August 7

Geography in the Elementary School. Grant E. Finch
Principles of Geography. Grant E. Finch
The World Today. Grant E. Finch

Pennsylvania State College, State College, Penn. June 29—Aug. 7
Geography of the United States and Canada. Frank E. Williams
Principles of Geography. Glenn T. Trewartha
European Countries. Frank E. Williams
Latin America. Glenn T. Trewartha
Economic Geography.
Geography in the Intermediate Grades. Edna Grant
Geography in the Upper Grades, 7 and 8. Elizabeth Keithan

George Peabody College for Teachers, Nashville, Tenn. June 8—Aug. 26
Principles of Human Geography. Miss Foust
Geography of the Lands. Mr. Brown
Climate and Man. Mr. Parkins
Economic Geography of the United States. Mr. Appleton
Geography for the Early Elementary Grades. Miss Foust
Geography of North America. Mr. Brown
Geography of Europe. Mr. Appleton
Geography of World Problems. Mr. Parkins
Conservation of Natural Resources. Mr. Brown
Influence of Geography on American History. Mr. Appleton
Materials and Methods in Geography Teaching. Mr. Parkins
Seminar in Geography. Mr. Parkins

Southern Methodist University, Dallas, Tex. June 4—Aug. 28
The Elements of Geography. Professor Ellis W. Shuler
Physiography of the United States. Professor Ellis W. Shuler
Economic Geography. Assistant Professor Edwin J. Foscue
The Teaching of Geography in Elementary Schools. Assistant Professor Edwin J. Foscue

University of Washington, Seattle, Wash. June 16—July 22; July 22—August. 26
Principles of Human Geography. First Term. Assistant Professor E. J. Saunders
Physiography and Geography of Europe. First Term. Assistant Professor E. J. Saunders
Geography of Washington. Second Term. Professor Henry Landes

University of Wisconsin, Madison, Wis. June 29—Aug. 7
Geography of South America. Professor Whitbeck
The New World. Professor Whitbeck
Economic Geography of the United States. Professor Bengtson
Economic Geography of the Eastern Hemisphere. Professor Bengtson
Geography of North America. Miss Loft
Teaching of High School Geography. Miss Loft
Climate and Man. Mr. Miller
Geography of Wisconsin. Mr. Smith
Physical Geography. Mr. Smith
Research Problems for Advanced Students. Staff
Field Course at Devils Lake (Aug. 10—28). Mr. Smith
Field Course in Rocky Mts. (June 13—July 5). Professor Lobeck

State Normal School, Milwaukee, Wis. June 22—July 31
The Teaching of Geography. Professor Louise W. Mears and Mr. Harvey A. Uber
The Geography of Wisconsin. Professor Louise W. Mears
The Geography of South America. Professor Louise W. Mears
Physiography. Mr. Harvey A. Uber

State Normal School, Whitewater, Wis. June 22—July 31
Principles of Geography. H. O. Lathrop
Methods in High School Geography. H. O. Lathrop
The New World. H. O. Lathrop
Commercial Geography. W. C. Fischer
Geography of Wisconsin. W. C. Fischer
Rocky Mountain Field Course. W. C. Fischer

Commencing July 7, 1925, the Whitewater State Normal School and the Wisconsin State Teachers Association offer a field trip thru the Southern Rockies. The trip commences at 3:30 P.M. of that day from St. Paul and closes July 20. The trip covers 4,300 miles and is estimated to cost $169.00. Written report necessary for credit. For further information, write W. C. Fischer Whitewater, Wisconsin, or E. G. Doudna, Madison, Wis.